

What is claimed is:

1. A separator for lithium ion secondary battery, comprising a porous base material
5 containing polyolefin, and a porous layer containing a vinylidene fluoride resin as a main component provided on at least one surface of the porous base material.
2. The separator for lithium ion secondary battery according to claim 1, wherein the
porous layer contains at least one vinylidene fluoride resin having a weight-average
10 molecular weight of 150,000 to 500,000 in an amount of 50% by weight or more based on the overall vinylidene fluoride resin.
3. The separator for lithium ion secondary battery according to claim 2, wherein the
porous layer has a thickness of 0.1 to 5 μm .
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4. The separator for lithium ion secondary battery according to claim 2, wherein the
porous layer has an average pore size of 0.01 to 10 μm .
5. The separator for lithium ion secondary battery according to claim 1, wherein the
20 average pore size of the external surface is less than that of the interior in the porous layer.
6. The separator for lithium ion secondary battery according to claim 1, wherein the
external surface has an average pore size of 0.1 to 5 μm and the interior has an average
25 pore size of 0.5 to 10 μm in the porous layer.

7. The separator for lithium ion secondary battery according to claim 6, wherein the porous layer has a weight of 0.5 to 10 g/m².

5 8. The separator for lithium ion secondary battery according to claim 6, wherein the porous layer has a thickness of 0.5 to 8 μm.

9. The separator for lithium ion secondary battery according to claim 1, wherein the porous base material has a thickness of 5 to 50 μm.

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10. The separator for lithium ion secondary battery according to claim 1, wherein air permeability as measured by a Gurley air permeability tester of the porous base material is 1000 sec/100 ml or less.

15 11. The separator for lithium ion secondary battery according to claim 1, wherein the porous base material has a porosity of 20 to 80% by volume.

12. The separator for lithium ion secondary battery according to claim 1, wherein the vinylidene fluoride resin is a homopolymer of vinylidene fluoride, or a copolymer of at
20 least one of ethylene tetrafluoride, propylene hexafluoride and ethylene, and vinylidene fluoride, or a mixture of the homopolymer and the copolymer.

13. The separator for lithium ion secondary battery according to claim 1, wherein air permeability as measured by a Gurley air permeability tester is 1000 sec/100 ml or less.

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14. A lithium ion secondary battery provided with the separator for lithium ion secondary battery according to claim 1.

15. A lithium ion secondary battery comprising:

5 a positive electrode obtained by bonding a positive electrode active material to a positive electrode current collector,

 a negative electrode obtained by bonding a negative electrode active material to a negative electrode current collector,

 the separator for lithium ion secondary battery according to claim 1 disposed
10 and bonded between the positive electrode and the negative electrode, and
 an electrolytic solution containing lithium ions held in the separator.